DECENTRALIZED WASTEWATER TREATMENT IN GEORGIA: BENEFITS AND MANAGEMENT NEEDS

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Abstract. The United States Environmental Protection Agency estimates that the U.S. faces wastewater infrastructure funding gap of over one hundred billion dollars. Other reports show that our nation's wastewater infrastructure is in poor condition; this is mostly attributable to a lack of investment in repairs and upgrades of conveyance systems and treatment facilities. In Georgia, the health of our wastewater facilities is one of the state's most pressing infrastructure concerns.

More centralized wastewater facility funding needs to be spent on upgrading and repairing existing plants. But because of the desire to keep communities growing, local governments and sewer authorities face constant pressure to utilize facility funds for system expansion. Sewer expansion can result in dense growth into formerly rural areas, increasing impervious surface coverage and significantly impacting stream health. The issue for Georgia, therefore, is how to provide for smart, sustainable development in growing communities while dedicating more funding towards repairing and upgrading our sometimes neglected and frequently aging centralized infrastructure.

This article makes the case for greater reliance and focus on decentralized (onsite or cluster) wastewater treatment options, which the Environmental Protection Agency states are reliable wastewater infrastructure if managed properly. About 40% of Georgia residents rely on decentralized systems, which are more cost effective than centralized plants but can still treat wastewater to acceptable levels. This article suggests that we can and should rely on these systems to treat our wastewater in many areas of the state, but only if we ensure that they are properly managed and funded. It offers specific recommendations, including: repeal of the law prohibiting county boards of health from requiring septic system maintenance; development of a Clean Water Act State Revolving Fund community loan program for repairing malfunctioning or aging systems; adoption of Responsible Management Entity programs for alternative onsite systems located in critical areas; and development of local programs for management of cluster systems.

INTRODUCTION

Centralized wastewater infrastructure in the United States is in dismal condition. In 2009, the American Society of Civil Engineers (ASCE), in its *Report Card for America's Infrastructure* ("ASCE Report Card"), gave U.S. wastewater treatment plants a grade of D- because of a decades long history of inadequate investments in upgrades and repairs.[i] The billions of gallons of raw sewage, industrial waste, and stormwater that annually enter surface waters from aging and damaged treatment plants negatively impact public and environmental health,[ii] and will be costly to remedy. The Environmental Protection Agency (EPA) estimates that the wastewater infrastructure funding gap in the U.S. is over one-hundred billion dollars.[iii]

Georgia is not immune to these wastewater infrastructure woes. The ASCE Report Card listed wastewater infrastructure as Georgia's third most pressing infrastructure concern out of fifteen categories, and reported the state requires $2.35 billion in wastewater infrastructure funding.[iv] Every year, sewage spills from aging and damaged plants and lines impair the quality of our state's waters and threaten public health. Compounding this problem, communities that experienced rapid growth prior to the recent recession often faced pressure to expand sewer lines rather than repair or upgrade existing facilities. In growing communities, such sewer expansion can lead to sprawl. This sprawl is not only frequently costly for local governments in terms of infrastructure costs, but also significantly impacts stream health. A 2010 study by the United States Geological Survey found that levels of impervious surface cover once thought protective of stream health (5-10%) are actually associated with significant degradation of macroinvertebrate communities that are indicative of water quality.[v]

Decentralized wastewater treatment systems, which include individual onsite systems (such as septic) and cluster systems that serve more than one structure, can be used to service growth in many situations. They are cheaper to construct and maintain than centralized plants, and can support smart, sustainable growth that is desired in many communities. Indeed, the Environmental Protection Agency (EPA) recognizes decentralized systems as appropriate, permanent wastewater infrastructure, provided they are properly managed.[vi] With appropriate management structures and growth plans in place, communities can rely on decentralized systems for existing and future development, mitigating development impacts and improving the health of surface waters by focusing expenditures for centralized plants on repairs and upgrades.

Decentralized wastewater systems *must* be properly managed throughout their life cycles if they are to be relied upon as permanent wastewater infrastructure. If improperly managed, they can contaminate ground and surface waters and impact public health. In Georgia, several challenges exist concerning the management of both onsite and cluster systems. These can, however, be addressed through state and/or local initiatives.

ONSITE SYSTEMS

Onsite treatment systems serve one home or business and use natural processes to treat wastewater. Final treatment of effluent occurs in the soil in an absorption field. In the last several decades, alternative onsite systems have been developed that can effectively treat wastewater to acceptable standards in problematic site conditions.

In Georgia, the Department of Community Health's Division of Public Health (DPH) is tasked with developing statewide rules and standards for the use of onsite systems.[vii] The local entities charged with adopting and enforcing these rules are the county boards of health (CBH).[viii] Each of Georgia's 159 counties has a CBH, and each CBH is housed within one of 18 health districts.

Septic System Maintenance. The most pressing issue with management of onsite systems in Georgia is that state law prohibits CBH from requiring ongoing maintenance of conventional septic systems, which represent the vast majority of onsite systems in use in the state.[ix] Public health and environmental quality concerns may not demand ongoing maintenance of all septic systems in the state. CBH should, therefore, be given the authority to require maintenance of systems in areas where improper maintenance could pose risks to public health and/or environmental quality. These "critical areas" would likely be found where systems are in small drinking water supply watersheds; where systems are around lakes or other aquatic features; in areas with high septic failure rates; areas with limiting site conditions (poor soils, high bedrock, etc.); and other areas as determined by the CBH.[x]

Unfortunately, CBH budgets are currently so limited that establishing septic maintenance requirements could prove difficult to implement.[xi] If state law was changed, it may be necessary for some CBH to partner with counties and/or municipalities to establish septic maintenance programs. A county or municipality could either utilize general funds or a nominal special assessment on affected properties to pay for administration of a septic maintenance program. If the CBH septic maintenance prohibition is not repealed or amended, local governments could adopt septic maintenance requirements on their own. The City of Berkeley Lake has already done so.[xii]

Funding for System Repairs/Replacements. Although requiring maintenance of septic systems in critical areas would extend the life-cycles of these systems and help protect public and environmental health, it could also raise additional issues: how to pay for the necessary system repairs and replacements that regular inspections and maintenance would undoubtedly uncover, and how to ensure proper management of alternative replacement systems that might be required.

The costs of repairs and replacements of onsite systems are usually born by the homeowner. In many critical areas, however, homeowners may not be able to afford expensive repairs or replacements. In addition, a septic maintenance program may prove politically unpopular if homeowners receive no financial assistance to pay these costs. Grants are available that can be used to pay for onsite system repairs and replacements,[xiii] but these funds would only assist a limited number of homeowners. A second option would be for the state to establish a linked deposit loan program using funds from the Clean Water Act Statewide Revolving Fund (CWA SRF). Some states have established these programs, wherein CWA SRF monies are loaned to communities for onsite repair and replacement programs. The communities pass these monies to homeowners through low or no interest loans.[xiv] At least one community in Georgia – Gwinnett County – has expressed interest in establishing a linked deposit loan program for septic system repairs.[xv]

Critical Area RME Programs. In critical areas, site conditions and/or the sensitivity of nearby aquatic resources will likely necessitate the use of alternative treatment systems. These systems generally employ electrical and mechanical parts that are more likely to break down than the components of conventional systems. It is therefore imperative that they are regularly inspected and maintained. In Georgia, DPH requires all alternative systems to receive bi-annual inspections and maintenance under a maintenance contract with the manufacturer or other service provider for the first three years after installation.[xvi] When the maintenance contract expires, the property owner is supposed to continue the bi-annual maintenance and report it to the local CBH.[xvii]

In critical areas, it may be prudent to establish a management program with more oversight and accountability than is provided through maintenance contracts followed by property owner maintenance and reporting. In areas where decentralized systems could pose great risks to public and environmental health if managed improperly, establishing a Responsible Management Entity (RME) program to manage systems may be advisable. An RME is a legal entity that has the technical, managerial, and financial capacity to ensure viable long-term, cost-effective, centralized management, operation, and maintenance of decentralized wastewater systems in accordance with appropriate regulations.[xviii] RME programs operate just like a centralized sewer utility – decentralized system users pay the RME user fees, and the RME takes care of all the

management tasks associated with the system. In many RME programs, part of the user fee is dedicated towards funding a reserve fund used only for system repairs and replacements. In this way, RME programs not only protect public health and the environment, but also let users pay what can often be rather expensive repair and replacement costs over time in increments; they will not be suddenly saddled with an expensive and unexpected repair bill.

In Georgia, a public-private partnership (PPP) may be the best RME program option for critical areas where septic systems are replaced with alternative systems. Local governments, and many CBH, do not possess technical expertise concerning alternative decentralized systems. A private partner can provide this expertise, along with managerial experience and the efficiencies of a private business. In a PPP program, the local government would provide the legal authority to create the program and enforce it, and the ability to obtain state and federal grants and loans. The private RME would both design/build and manage the systems post-installation. The program would likely be established via a special district; counties and municipalities may create these districts (which are useful tools for providing special services within a community) and assess fees for the services provided therein.[xix] Special districts can be coterminous with county or municipal boundaries, or they can be smaller areas within the community. The entity creating the district does not have to be the same as the one providing the services.[xx]

CLUSTER SYSTEMS

Cluster wastewater treatment systems can take many forms. Some utilize the exact same treatment processes as a conventional septic system and serve a small number of homes. Others use more advanced processes, and may treat the wastewater from hundreds of structures. Some discharge treated effluent into surface waters, some utilize constructed wetlands, and some conduct final treatment in a suitably sized absorption field. Depending on the treatment processes used, cluster systems can treat wastewater from households or commercial establishments. They are generally utilized in communities where centralized sewer service is unaffordable or impractical. In recent years, however, many communities have found that cluster systems are superior to centralized facilities in terms of growth management.

With centralized wastewater treatment, sewers extend many miles out from the treatment facility. Because central sewer can service smaller lots and commercial establishments, this often leads to sprawling growth that extends out along "the line." As noted above, the increase in impervious surface associated with such growth can seriously impact stream health. Individual onsite systems promote the opposite scenario; minimum lot size requirements for absorption fields and wastewater strength limitations lead to large-lot growth with limited opportunity for commercial establishments. Cluster systems, on the other hand, can both service small lots and commercial establishments. And because cluster systems are designed to service smaller, defined areas and wastewater loads, they can be used to facilitate sustainable growth plans. Coweta County, Georgia, has established a policy to utilize cluster systems for the sustainable, "village center" growth it desires for its community.[xxi]

In Georgia, DPH and the Environmental Protection Division (EPD) have divided authority over cluster systems. There is no practical reason for this; it is merely a byproduct of the fact that DPH exercises authority over wastewater treatment systems that treat up to 10,000gpd.[xxii] EPD cluster regulations for systems that treat more than 10,000gpd provide for reliable management of these systems by, among other things: requiring RME management of the facility; requiring a trust indenture naming an unrelated successor organization that is prepared to step in and assume responsibility should the RME discontinue management; and requiring that the RME posts a performance bond or similar guarantee sufficient to cover the management of the system for at least one year in the case the RME discontinues management.[xxiii]

DPH has only one regulation applicable to the cluster systems it exercises authority over. It requires that "[w]here an on-site sewage management system is proposed to serve facilities under separate ownership, a contract to insure proper operation and maintenance of the system signed by all owners, shall exist as a precondition to the issuance of a permit for the construction of an on-site sewage management system."[xxiv] This is a reasonable and necessary regulation, but it does not ensure reliable, sustainable management of small cluster systems. Such management is critical. Because these systems treat larger volumes of wastewater than individual onsite systems and may service commercial establishments, system failures are much riskier. This makes proper operation and maintenance much more important. And if there is no backup management entity or funding in case the contractual management entity discontinues management, it is likely that the local government will be burdened with management of the system.

Georgia communities can utilize cluster wastewater systems to provide acceptable treatment and sustainable growth, but they must ensure proper management. A PPP RME program for cluster systems is one workable option. Another is for the local government to partner with the local sewer utility. In Coweta County, the local government has partnered with the local water and sewer authority, Newnan Utilities (NU). Via an intergovernmental contract and county ordinance, Coweta County requires that all decentralized wastewater systems within its borders are

designed, constructed, operated and owned by NU. The county commission must also approve construction of decentralized systems via issuance of a special use permit. These systems are supposed to service compact, nodal developments instead of linear ones; the commission must consider the layout of the development when deciding whether to issue the special use permit. Once a special use permit is issued, the NU decentralized wastewater department (one director and five staff members) oversees the design and construction of the system. Design and siting must adhere to Coweta County requirements for decentralized systems. Among other things, the county requires a replacement absorption field and minimization of adverse effects resulting from noise, odor, lighting and aerosol drift.

The developer or business owner pays all costs of design and construction. NU owns the system and all permits for the system are in the utility's name so the developer undertakes no legal responsibility. For systems that are used in subdivisions, NU requires the developer to subsidize operation of the system until a certain number of homes are sold. Residential user fees for the system are about $40.

CONCLUSION

Decentralized wastewater systems are an affordable, effective mode of wastewater treatment. If the state and local governments implement programs, policies, and regulations that provide for their effective management and use to sustain smart growth, more funding for centralized treatment facilities could be put towards repairs and upgrades of aging and poorly maintained treatment plants, improving environmental quality and reducing threats to public health.

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[i] American Society of Civil Engineers, *Wastewater: Report Card for America's Infrastructure*, at http://www.infrastructurereportcard.org/fact-sheet/wastewater.

[ii] Charles Duhigg, *Sewers at Capacity, Waste Poisons Waterways,* NY TIMES, Nov. 23, 2009.

[iii] U.S. EPA Office of Water, *The Clean Water and Drinking Water Infrastructure Gap Analysis*, EPA -816-R-02-020 (September 2002).

[iv] American Society of Civil Engineers, Georgia: Report Card for America's Infrastructure, *at* http://www.infrastructurereportcard.org/state-page/georgia .

[v] Thomas F. Cuffney, et al, *Responses of benthic macroinvertebrates to environmental changes associated with urbanization in nine metropolitan areas*, 20(5) Ecological Applications 1384 (2010).

[vi] U.S. EPA Report to Congress (1997), *available at* http://www.epa.gov/owm/septic/pubs/septic_rtc_all.pdf .

[vii] O.C.G.A. § 31-2-12.

[viii] O.C.G.A. § 31-3-5.

[ix] O.C.G.A. § 31-3-5(b)(6).

[x] Metropolitan North Georgia Water Planning District, Wastewater Management Plan 8-5 (May 2009).

[xi] *See, e.g.*, Public Health's decline – Partner up! for Public Health, *at* http://www.togetherwecandobetter.com/decline.html.

[xii] City of Berkeley Lake Code of Ordinances, Chap. 58 (2008).

[xiii] Clean Water Act section 319 grants, Community Development Block Grants, and others can be used to fund decentralized system repairs in some situations.

[xiv] U.S. EPA Office of Water, *Activity Update: Funding Decentralized Wastewater Systems Using the Clean Water State Revolving Fund*, EPA 832-F-09-005 (2009); Amanda Worthington, Funding Septic System Repairs in Gwinnett County Through the Clean Water State Revolving Fund (2006), *available at* http://www.rivercenter.uga.edu/service/iwe/pdf/2006_12_funding_septic_repairs_srf_worthington.pdf.

[xv] Worthington, *supra*, note xiv.

[xvi] Ga. Reg. 290-5-25-.18; Georgia Department of Community Health, Division of Public Health, *Manual for On-site Sewage Management Systems*, Section D, *available at* http://health.state.ga.us/programs/envservices/onsitemanual.asp .

[xvii] Georgia Department of Community Health, Division of Public Health, *Manual for On-site Sewage Management Systems* D-18, D-19.

[xviii] U.S. EPA Office of Water, *Onsite Wastewater Treatment Systems Manual* Glossary-5, EPA 625/R-00/008 (Feb. 2002).

[xix] Ga. Const. Art. 9, § 2, ¶ 6.

[xx] *DeKalb County v. Perdue* --- S.E.2d ----, 2010 WL 1005043 (Ga.,2010)

[xxi] Coweta County 2006-2026 Comprehensive Plan: Future Wastewater Treatment Strategy for Coweta County, *available at* http://www.coweta.ga.us/Index.aspx?page=319 .

[xxiv] Ga. Reg. 290-5-26.18(2).